

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference CH-7663PCT	FOR FURTHER ACTION		See item 4 below
International application No. PCT/US2004/003412	International filing date (<i>day/month/year</i>) 06 February 2004 (06.02.2004)	Priority date (<i>day/month/year</i>) 07 February 2003 (07.02.2003)]	
International Patent Classification (IPC) or national classification and IPC 7 D21H 17/72, 23/76 // D21H 17:29, 17:42, 17:55, 21:20, 21:24			
Applicant LANXESS CORPORATION			

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).																								
2.	This REPORT consists of a total of 7 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input checked="" type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 12 August 2005 (12.08.2005)
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 26 JUL 2004

To:

see form PCT/ISA/220

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/003412

International filing date (day/month/year)
06.02.2004

Priority date (day/month/year)
07.02.2003

International Patent Classification (IPC) or both national classification and IPC
D21H17/72, D21H23/76

Applicant
H.C. STARCK INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/003412

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/003412

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-65
	No: Claims	
Inventive step (IS)	Yes: Claims	1-65
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-65
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43*bis*.1 and 70.10)

and /or

2. Non-written disclosures (Rules 43*bis*.1 and 70.9)

see form 210

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1 The following documents are referred to in this communication:
D1 : US 6 264 791 B1 (LINDSAY JEFFREY D ET AL) 24 July 2001 (2001-07-24)
D2 : US 5 750 489 A (GARCIA RIGOBERTO FELIPE ET AL) 12 May 1998
(1998-05-12)
D3 : US 3 844 880 A (MEISEL F ET AL) 29 October 1974 (1974-10-29)

- 2 Document D1, which is considered to represent the most relevant state of the art, discloses (the references in parenthesis applying to this document):
A composition comprising a) a polymeric anionic reactive compound "PARC" and
b) a debonder (column 7, lines 28-41) which, when used to treat a fibrous web (paper, tissue paper), creates "very high wet:dry tensile ratios".

These ratios are "at least about 40% or higher" (column 4, third paragraph).
The debonder is preferably cationic (column 7, line 42 to column 8, line 22).

From this, the subject-matter of independent claim 1 differs in that:
The anionic polymer has a molecular weight of at least about 50,000 Daltons and a molecular weight charge index value of at least about 10,000 leading to a ratio of wet to dry tensile strength from about 1:5 to 1:2 and a ratio increase of at least about 10% when used together with a cationic strength agent.

- 2.1 The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).
- 2.2 The problem to be solved by the present invention may be regarded as improving the prior art composition in order to achieve a higher wet to dry tensile strength ratio when applying said composition to a fibrous substrate.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

Although the molecular weight of the PARC as disclosed in D1 is not given in Daltons it would appear that the molecular weights are rather low (column 5, lines

20-65). None of the examples 1 to 4 of D1 describes the preferred composition comprising PARC and a debonder. Therefore, there are no experimental data available for supporting said statement regarding "creating very high wet:dry tensile ratios" in the fourth paragraph of column 7.

The document D3 relates to a similar problem, namely to manufacture a cellulosic sheet material (tissues) having improved softness and acceptable tensile strength (column 2, lines 24-32). According to one of the embodiments disclosed in D3 (columns 2 to 4; example IV) an anionic acrylic emulsion, a cationic surfactant (debonder) and a cationic wet strength resin are added sequentially to a wood pulp furnish.

According to D3, commercially available acrylic emulsions and anionic styrene-butadiene latexes are used. There is no teaching in D3 to select polymers having a molecular weight of at least 50,000 Daltons and a molecular weight charge index value of at least 10,000.

There is hence no incentive from D3 to use an anionic polymer as described in claim 1 or to apply such a polymer with the debonder as a composition.

A similar composition as that disclosed in D1 is known from D2, but for detergents. The composition comprises a surfactant which may be cationic, but is preferably anionic or nonionic according to all the examples, and an anionic polymer having a molecular weight of 10,000 to 1,000,000 Daltons.

Therefore, neither D2 nor D3 gives any hint to modify the composition as disclosed in D1 in order to solve the problem.

- 2.3 Claims 2-37 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.
- 3 For the same reasons as above, see items 2 to 2.3 and keeping in mind that D2 does not concern paper making, the subject-matter of independent claim 38 (a paper product) and that of independent claim 51 (a method for making a paper product) are novel (Article 33(2) PCT) and involve an inventive step (Article 33(3) PCT).

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/US2004/003412

- 3.1 Claims 39-50 and 52-65 are dependent on claim 38, respectively 51 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VI

Certain documents cited

Certain published documents

Application No Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO-A- 2004/001129	31.12.2003	18.06.2003	19.06.2002

Re Item VIII

Certain observations on the international application

- 4 Claims 16 and 24 comprise all the features of claim 1 and are therefore not appropriately formulated as claims dependent on the latter (Rule 6.4 PCT).
- 5 The meaning of the feature "fibrous substrate" described in claims 1, 16, 24 is broader than the definition given in the description on page 10. The claims are hence inconsistent with the description (Art. 6 PCT).
- 6 The proviso starting with "wherein when the composition treats a fibrous substrate, ..." in claims 38; 51 would seem meaningless in a claim describing the actual treatment of a fibrous substrate (paper, respectively paper pulp) - Art. 6 PCT (lack of clarity).